



Resource Conservation Challenge (RCC)

2005 Action Plan

V e r s i o n 1

May 2005



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Introduction

In late 2004, following the completion of the RCC Strategic Plan, EPA began a process to discuss and determine how best to implement the RCC at the national level. Where the RCC Strategic Plan sets forth an umbrella for the RCC program as a whole by articulating broad visionary goals, we recognized the need for a practical guide to the RCC. This document would need to translate the Strategic Plan goals to an implementation level, setting measurable targets and commitments and ways to achieve them. This thinking was the genesis of the RCC national areas of focus and action plans.

As mentioned above, the Strategic Plan describes the RCC's direction, focus, vision and broad goals. It is the key path along which the RCC will move forward in the next 5 to 10 years. From this plan, the RCC will continue to grow from a collection of individual, ambitious projects and achievements into a cohesive set of robust programs that can accelerate progress toward the goals of resource conservation and recovery interest in RCRA as well as the pollution prevention (P2) and risk reduction goals of the PPA and TSCA, respectively. These programs aim to identify opportunities for, and ways to achieve, pollution prevention, recycling, reuse, risk reductions, and energy and materials conservation. Specifically, the Plan will:

- Coordinate OSW and OPPTS waste and toxic chemical reduction programs and projects;
- Better align EPA and state focus to attain effective materials management;
- Build on current partnerships and attract new partners; and
- Illustrate the measures used to track success for future projects.

After completing the Strategic Plan development, the RCC focused on the identification of national areas of focus (a.k.a. National Priority Areas) and development of accompanying action plans. This is a critical step because now that we have identified the National Priority Areas, all regions and EPA RCRA/TSCA/PPA Headquarters offices are expected to commit resources to achieving the stated objectives and targets for each area. We believe that only by coordinating efforts across the country will EPA begin to concretely move forward in achieving effective materials management. To accomplish this, OSW held a series of meetings and discussed possible areas of national focus. These meetings concluded at the fall 2004 RCRA Division Director meeting in San Francisco, with OPPT and regional P2/Toxics participation and input, where four National Priority Areas were selected:

- Achieving the National 35 percent Recycling Rate for Municipal Solid Waste;
- Beneficial Use of Secondary Materials;
- Priority and Toxic Chemical Reductions;

- Green Initiatives—Electronics

Once the areas were identified, participants established workgroups to draft an action plan for each area. Each workgroup consisted of a small number of headquarters and regional RCRA and OPPT program experts with a focus on pollution prevention, risk reduction, and resource conservation. For each plan, the groups were asked to identify the scope or breadth of their area, key objectives to be achieved, measurable environmental targets or outcomes, and the means and strategies that would lead to success.

From these drafts, we gathered input from a broad group of RCRA and P2/Toxics managers and staff from EPA and states. This input brought a national perspective to the areas and helped shape the action plans for successful implementation. These plans are consolidated in this document—the RCC 2005 Action Plan. This document is a living document that will be amended as we reach key milestones and identify new objectives and targets that will help to achieve our ultimate RCC goals. Within each section, we have provided the leads who can be contacted for additional information regarding their focus area.

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35 Percent Recycling of Municipal Solid Waste Action Plan

This action plan lays out a framework or road map for increasing the rate of municipal solid waste recycling and helping the country meet a national goal of 35 percent. It identifies targeted waste streams, proposes 2008 goals for each of the targeted streams, lists criteria for identifying projects that will help us achieve our goals, and discusses tools and approaches to consider. We expect the projects that EPA and other stakeholders carry out will create a national culture that emphasizes recycling and will help build the infrastructure that successful recycling programs demand.

I. Scope

While this action plan addresses municipal solid waste (MSW) as defined in the 2002 Waste Characterization Report, we selected targeted streams for special emphasis based on generation and recovery rates and the potential for increased recovery or diversion. We identified these waste streams (and targets) as the most effective focus to achieve a 35 percent national recycling rate (see Table 1 below and section on targets). Specifically, we will have a national focus on the following streams: paper, organics, and packaging/containers.

- **Paper and paperboard:** The scope of this plan encompasses all paper and paperboard products, including office papers, books, magazines, mail, telephone directories, newsprint and inserts, corrugated boxes, commercial printing, bags and sacks, and folding cartons.
- **Organic waste:** Food waste is food preparation wastes and uneaten food from residences, grocery stores, restaurants, cafeterias, and lunchrooms. We are not focusing on food waste generated during the preparation and packaging of food products, since this waste is not included in the definition of MSW. Yard waste includes grass, leaves, and tree and brush trimmings from residential, institutional, and commercial sources.
- **Packaging/containers:** The following categories of packaging waste are included in the scope of this plan: paper folding cartons (e.g., detergent boxes), wood packaging, polymer wraps/films (used, for example, to secure loads to pallets in transport packaging), and shipping containers (e.g., wax corrugated cardboard, pallets). We are including all beverage containers (aluminum, glass, and plastic) in the scope of this plan. For the purposes of tracking progress, folding cartons will be tracked under paper and paperboard products.
- We will decide whether to target additional waste streams as we accomplish our goals for paper, organic waste, and packaging/containers or whether to increase our goals and targets for these three streams. The criteria for targeting additional waste streams will be the same as the criteria for targeting the initial waste streams: generation and recovery rates and the potential for increased recovery or diversion.

- While almost every municipal and commercial sector generates one or more of these wastes, we selected several sectors on which to focus based on the following criteria: generation of more than one of the targeted waste streams, opportunities for recycling, and established partnerships or viable potential partners. Based on these criteria, we will target the following sectors: schools, office buildings, landscapers, establishments that serve food (e.g., food courts, restaurants), the hospitality sector, Recycling on the Go venues (e.g., shopping centers, ball parks, special events, convenience stores, health clubs, recreation centers, parks), tribally operated facilities, and federal government agencies.

Table 1								
2001 MSW					Proposed 2008 Recovery Goals			
	Generation (MT)	Generation Rate (%)	Recovery (MT)	Recovery Rate (%)	%	MT	% Increase	MT Increase
Organic Waste								
Food, Other	26.2	11.4	0.7	2.8	5	1.28	2.2	0.58
Yard Waste	28.0	12.2	15.8	56.5	60	16.8	3.5	1.0
Paper								
Paper and Paperboard Products (includes folding cartons)	81.85	37.2	36.7	44.9	53.8	44.1	8.9	7.32
Packaging and Containers								
Wood Packaging	8.17	3.6	1.25	15	24	2	9.2	0.75
Plastic Wraps	2.58	1.1	0.17	6.6	19	0.5	12.8	0.33
Total Beverage Containers	11.3	5.0	2.93	26	39	4.36	12.7	1.43
Total	<i>158.1</i>	68.9	57.55	36.4	43.7	69.04	7.3	11.5

NOTE: Given the total 2001 MSW generation of 229.2 MT and the 2001 recovery of 68 MT, our 2008 goal of an 11.5 MT increase in recovery or diversion will result in a 2008 total recovery of 79.5 MT. Assuming that the generation remains the same as in 2001, this plan will achieve a recovery rate in 2008 of approximately 35 percent compared to a recovery rate of XX percent in 2001. **NOTE:** *We've adjusted some of these targeted streams and will need to revisit these numbers.*

II. Targets

- C **GPRA:** Each year through 2008, maintain the national average MSW generation rate at not more than 4.5 pounds per person per day.
- C **GPRA:** By 2008, increase recycling of the total annual MSW produced to 35 percent from 31 percent in 2002.

These goals would be met through the following increases in recycling in key waste categories:

- C **Paper and paperboard:** An increase in the recovery of paper and paperboard products from 36.7 million tons in 2001 to 44.1 million tons in 2008 (an increase in recycling of total paper/paperboard materials from 44.9 to 53.8 percent).
- C **Food waste:** An increase in the recovery/diversion of food waste from .7 million tons in 2001 to 1.28 million tons in 2008 (an increase in recycling from 2.8 to 5.0 percent).
- C **Yard trimmings:** An increase in the recovery/diversion of yard waste from 15.8 million tons in 2001 to 16.8 million tons in 2008 (an increase from 56.5 to 60.0 percent).
- C **Paper folding cartons:** An increase in the recovery/diversion of paper folding cartons from .48 million tons in 2001 to .8 million tons in 2008 (an increase from 8.7 to 14 percent). These figures are included in the paper and paperboard figures above.
- C **Wood packaging:** An increase in the recovery/diversion of wood packaging from 1.25 million tons in 2001 to 2.0 million tons in 2008 (an increase from 15 to 24 percent).
- C **Plastic wraps:** An increase in the recovery/diversion of plastic wraps from .17 million tons in 2001 to .5 million tons in 2008 (an increase from 6.6 to 19 percent).
- C **Beverage containers:** An increase in the recovery/diversion of beverage containers from 2.93 million tons in 2001 to 4.36 million tons in 2008 (an increase from 26 to 39 percent).
- C We will continue to measure these results using the measurement methodology from the Waste Characterization Report. This Report has been our primary source of generation and recycling rates. We also hope to use data from the Hospitals for a Healthy Environment (H2E) effort, performance track data, and Supplemental Environmental Projects (SEPs). We also will be analyzing and comparing state

data, as well as other measurement methodologies and data sources, such as Biocycle, to better understand trends. We will work with the regions to determine the need and ability to regionalize the data from the Waste Characterization Report.

- C In the next 3 months, we will meet with states, tribes, and appropriate national and local stakeholders to ground-truth these goals and further identify specific opportunities and strategies for promoting them.

More broadly, EPA will work at the national and regional level to enhance public commitment to recycling, increase public access to recycling opportunities, and engage national stakeholders in the national recycling goal. In doing so, we'll work closely with states and local governments, and we'll target our efforts strategically, toward the commodity streams identified above and toward the commercial and municipal sectors that provide the greatest opportunities for success.

III. Project Criteria

We will apply the criteria listed below to current projects as well as potential new projects to help us meet our goals and to help us use resources more efficiently and effectively. Projects should be designed to:

- C Make new, significant contributions to the national goals.
- C Be measurable.
- C Be sustainable (i.e., maintained into the future).
- C Have a national impact or be replicable.
- C Focus on what we do best (e.g., EPA as a convener or facilitator).
- C Demonstrate a new approach that leads to a significant increase in recycling MSW.

IV. Regional Action Plans

This action plan lays out a framework or set of parameters to achieve national targets. Each region is expected to work with the states, tribes, local governments, and other partners and stakeholders to develop a plan identifying specific projects and commitments (e.g., deadlines for completion, numerical commitments) that will contribute to the national targets and that reflect the specifics of their regions. These plans will reflect matrixes provided by March 24, 2005. Plans should be provided by June 1, 2005, and will focus on work in FY06 and beyond.

In developing these plans, regions should consider the principles outlined below (e.g., work with existing programs) and identify what they hope to accomplish (e.g., 10 new WasteWise members with total targets of XX pounds of paper recycled). Not all regions will be able to commit to all streams, all existing programs, etc. We expect OSW and the regions to dedicate their resources to increasing recovery of the streams targeted in this

action plan. We will reduce or close out activities that do not target these streams, shift resources as necessary, and undertake new activities that meet the criteria listed above. Recognizing the difficulty in reducing or closing out certain activities and shifting resources, we expect to close out these activities and shift resources by the beginning of FY 2006.

V. Quick Start for This Fiscal Year

A. *Office of Solid Waste (OSW)*

Step 1: Develop a list of partners and stakeholders for the April regional SWIMM meeting; conduct external scoping and stakeholder meetings; share results with regions; identify next steps based on outcome of meetings (e.g., issues identified, suggested roles for EPA).

Step 2: Review the regional matrices submitted in March 2005, together with action plans and feedback from meetings; work with regions and stakeholders to determine if targets are reasonable and achievable; work with our stakeholders to ensure that our goals/targets are complementary; determine which, if any, should be added as a GPRA commitment.

Step 3: Meet with key tribal, state, local, and external stakeholders to ground-truth this action plan and identify the best path forward and the most appropriate contributions of the federal government (scheduled for May 2005).

Step 4: Decide if we will commit to a WasteWise Paper Challenge and a WasteWise Food Challenge.

Step 5: Work with our partners and stakeholders to develop the Recycling on the Go Program.

B. *EPA regions*

Step 1: Complete matrices and action plans, determining the streams and sectors on which to focus. For example, regions may decide to focus on a particular venue, such as ball parks, for the Recycling on the Go Program.

Step 2: Determine if existing projects/efforts meet the project criteria listed above and make adjustments as needed.

Step 3: Include reporting requirements in all projects/efforts.

VI. Tools and Approaches

A. Work with primary partners and key stakeholders

We cannot achieve the ambitious results identified in the “Targets” section without working with our primary partners—states, tribes, and local governments—as well as key stakeholders (e.g., manufacturers, retailers, other EPA programs, NGOs, trade associations). Collaborative efforts with each of these partners and key stakeholders remain an essential element of our success in achieving these goals. We see EPA’s role as engaging national stakeholders in broad initiatives through meetings with leaders of these organizations (e.g., executive directors, chairs of boards, presidents/vice presidents, CEOs). We also will be working with our regional counterparts, both solid waste and pollution prevention. We will hold an internal meeting with both these groups in April 2005 in Chicago.

In addition to the existing partnerships and efforts, OSW will be conducting a series of stakeholder meetings with recognized experts and hands-on practitioners—individuals, companies, and national organizations—to identify creative solutions to increasing recycling, changing the disposal culture, and building the needed infrastructure. We will work with our partners and stakeholders to determine whether the goals and targets we set in this action plan complement the goals and target our partners and stakeholders have, keeping in mind our ultimate goal of achieving a 35 percent national recycling rate by 2008. A key outcome of these meetings will be to identify appropriate roles for both OSW and EPA’s regional offices.

For example, OSW already has conducted three scoping meetings with groups of stakeholders to identify and discuss issues with increasing the recovery of paper. We will conduct additional scoping meetings and use the information gathered at these scoping meetings to develop an agenda for a broad paper stakeholder meeting the third quarter of FY 2005. We expect to identify specific goals and projects at the stakeholder meeting. We are working on stakeholder meetings for the other waste streams—organic waste and packaging and containers—to occur in the third and fourth quarters of 2005 and will work with our senior officials within OSWER to provide opportunities to hear directly from stakeholders.

We will develop a list of partners and stakeholders for our April regional SWIMM meeting to form a foundation for our discussion of complementary OSW and regional efforts. For example, we will discuss a partnership with USDA to increase donations of edible food. We also will be meeting with EPA Regional Pollution Prevention Coordinators at the April meeting to discuss potential joint efforts. In addition, we will identify innovative solutions already in use, such as the New York City recycling contract, and share them broadly.

B. Work with existing EPA programs

Working within existing programs, such as WasteWise and GreenScapes, will help us avoid brand saturation and use resources efficiently. To the extent possible, OSW will quantify current results (e.g., amounts recycled) and benefits (e.g., greenhouse gases reduced) of our existing programs, as well as potential increases in these results and benefits as we consider adding components to the programs (e.g., a food waste challenge under WasteWise, a WasteWise Paper Challenge). Regions should consider what newly recruited members/partners can contribute to these results and benefits. We also will take advantage of the market development aspects of the comprehensive procurement guidelines and environmentally preferable purchasing. We also will reach out to key national stakeholders and organizations, which may or may not have been involved in ongoing programs, to secure broad support for national recycling goals. These are likely to include such groups as retailers, sports leagues, and universities.

C. Replicate successful models/programs

EPA and the states and tribes have had numerous regional or local successes. We need to learn from these successes and determine whether they can be replicated in other regions or states or even nationwide. Regions should share successes with OSW and other regions. We all need to discuss and determine what can be replicated and how to replicate these successes.

In addition, we generate a significant amount of MSW while we're on the go at places like airports, shopping centers, ball parks, and parks. Learning from and building on successful pilots and demonstration projects (e.g., ball park recycling, America's Marketplace Recycles), OSW will launch a Recycling on the Go Program to focus on recyclables generated away from the home. We will partner with service groups, such as the Girl Scouts, and charities, such as Habitat for Humanity. The Recycling on the Go Program is a new, developing program which we need to share and discuss with our partners and stakeholders. We are looking to America's Marketplace Recycles for lessons learned. We will also look for lessons learned from waste handling procedures used at tribally owned model facilities for waste reduction (e.g., the Mohegan Sun complex).

D. Gather, research, study, analyze, and share information

Several ongoing efforts will inform the issues we all are grappling with (e.g., cost and availability of recycling equipment, such as bins, balers, trucks, and dumpsters); OSW will track, and in some cases support, these efforts to expand our collective knowledge. For example, we will identify what initiatives local and state governments, NGOs, trade associations, and others are supporting. Where appropriate, we will explore the magnitude of the issue and determine whether viable, effective solutions exist or can be developed, whether EPA has a role, and whether we can leverage existing efforts. For instance, OSW has been working with our partners on packaging designs and systems rooted in cradle-to-cradle principles to move packaging toward more sustainable designs and systems, including potential to reduce waste. We also are tracking the use and issues

with radio-frequency identification devices (RFIDs). RFIDs may impact recovery rates, such as wood packaging.

OSW also plans to develop best management practices in several areas with the intent to widely share information. For example, we will update the landscaping criteria for federal buildings based on the GreenScapes concept. OSW will create a how-to guide for food waste generators interested in donating edible food (working with USDA as appropriate), which will help us with our source reduction goal, or in composting and will widely distribute the guide through EPA's Web site and to our WasteWise partners. We also will promote the use of compost for erosion and sedimentation control.

Both the regions and OSW will consider the most effective means of distributing information, changing the culture, and educating the public (e.g., PSAs). We are committed to providing needed, effective information and technical support. We expect to identify the areas for future studies during the stakeholder meetings.

E. Measure and report results

OSW and regions will report annually on their specific commitments/contributions for each activity in number of pounds of targeted waste streams reduced or recycled based on their regional action plans. OSW will aggregate these numbers as needed and use them to report national successes, as well as to support the RCRA PART scores. OSW will continue to work on appropriate measures and methods of data collection, benefits, and efficiency measures.

We will work with our partners and other stakeholders to determine the most appropriate method of including their contributions to the targets listed above. We will publish examples of the results on our Web site and in the RCC annual report.

F. Education and outreach

We have heard from many of our stakeholders already that one of the key components of achieving a 35 percent recycling rate is public education and outreach designed to increase the public's commitment to recycling—in other words, cultivating a national recycling ethic. Stakeholders suggest that EPA's role is to gather the best ideas, engage the national media, foster national leadership, and engage the private sector in committing to support a national recycling campaign. We need to recommit ourselves and educate the public on the environmental benefits and the economic impacts of recycling.

We will continue to support America Recycles Day and work with National Recycling Coalition (NRC) to promote recycling all year long. We also will work with our stakeholders through our stakeholder meetings and individual, targeted efforts to gather the freshest, most creative ideas for the message and for delivering that message.

Beneficial Use of Secondary Materials Action Plan

I. Scope

We are focusing on three materials that are strong candidates for beneficial use:

A. *Coal combustion products (CCPs)*

CCPs include fly ash, bottom ash, flue gas desulfurization (FGD) gypsum and wet and dry scrubber materials, boiler slag, and fluidized bed combustion (FBC) ash.

B. *Foundry sand*

Foundry sand is a byproduct from the production of ferrous and nonferrous metal castings. We will be focusing our beneficial use effort primarily on non-hazardous “green sands,” which use clay as binder material. Green sand is the molding media most commonly used by foundries.

C. *Construction and demolition debris (C&D debris)*

C&D debris includes materials generated from the construction, demolition and renovation of buildings and infrastructure (roads and bridges), and from land clearing.

Table 2			
Material	Annual Quantity Generated	Annual Quantity Recycled	Reference
Coal combustion products	128.7 million tons (2002)	45.5 million tons, or 31.5% (2001)	2002 American Coal Ash Association Coal Combustion Products Production Use and Survey
Foundry sands	6–10 million tons	500,000 tons, or 5–8%	http://www.foundryrecycling.org/whatis.html
C&D debris	136 million tons of debris associated with buildings (1996); quantities from infrastructure and land clearing not available, but likely > 200 million tons	27–41 million tons, or 20–30% of building debris (1996); amount recycled from infrastructure and land clearing is not available	“Characterization of Building-Related Construction and Demolition Debris in the United States.” June 1998, U.S. EPA.

II. Objectives

Broadly, our overall objective for these materials is to increase the amounts that are beneficially used in an environmentally sound manner. This objective supports the Agency's goals, articulated in the 2003–2008 EPA Strategic Plan, of “Land Preservation and Restoration” and “Clean Air and Global Climate Change” by extending the useful life of landfills, conserving virgin resources, and reducing energy use and associated greenhouse gas emissions.

III. Targets

A. *Coal combustion products*

Under the Coal Combustion Products Partnership (C2P2), the American Coal Ash Association (ACAA) and the Utility Solid Waste Activities Group (USWAG) have set goals of:

- Increasing the use of CCPs from 31 percent in 2001 to 45 percent by 2008; and
- Increasing the use of coal ash in concrete from 14 million tons in 2002 to 20 million tons by 2010.

The partners are measuring results towards these targets by ACAA's annual CCP Production and Use Survey. We support the partnership's targets. Our activities are designed to help the partnership achieve these targets. Wherever possible, we will track and report the increased usage of CCPs associated with our activities. For example, we will report the amounts and types of CCPs reported by applicants to the C2P2 Awards Program.

B. *Foundry sands*

We are working with the American Foundry Society (AFS) and the Foundry Industry Recycling Starts Today (FIRST) to set national targets for the beneficial reuse of foundry sands. While we have general estimates (see Table 2), we will work with our partners on the critical task of analyzing and characterizing these materials to allow us to set the baseline for generation and recycling rates, and goals for increased beneficial use. Because foundry sand generation rates are not reported to EPA, we will be relying on industry data and looking for university partners who already are studying foundry sand issues. Wherever possible, we will track and report the increased use of foundry sands associated with our activities. For example, as organizations join our new ResourceSmart promotional program, encouraging large construction projects to use industrial byproducts, we will track the amounts of foundry sands (and other materials) used in these projects.

C. *C&D debris*

We are working with our trade association partners (e.g., Construction Materials Recycling Association, National Demolition Association) to set targets for the reduction and beneficial reuse of C&D debris. We currently are updating the existing characterization study (U.S. EPA, 1998) so that we can set an appropriate baseline for generation and recycling (the current study addresses only debris from buildings). Both trade associations are planning major surveys of their members, which will generate valuable data. Until we are able to set numerical targets, we will be tracking the amounts of C&D debris diverted from disposal as a result of the individual activities. For example, we will report the amounts of debris recovered and recycled through our ongoing deconstruction grant work with the Army Corps of Engineers. Similarly, we will report the amounts of debris recycled by WasteWise Building Challenge partners.

IV. Strategies

To increase the environmentally safe beneficial use of industrial byproducts and C&D debris, we are pursuing four broad strategies:

A. *Analyze and characterize the target materials*

As part of this strategic component, we will work with our industry partners to collect and promote baseline data about the manufacturing processes, the material quantities and properties, current and potential management and beneficial use practices, to the extent that this information currently is not available. We need these data to (1) document that there are real and untapped opportunities for increased beneficial use, (2) develop a baseline, set bold yet achievable goals and targets, and measure progress, and (3) provide a repository of information about these materials for use by the public, including States conducting beneficial use determinations, individuals seeking to develop new markets, and generators exploring opportunities for alternatives to disposal.

B. *Identify environmentally safe and beneficial practices*

Unanswered questions about safety frequently have been cited as impediments to increased beneficial use. As we provide sound technical assessments of the safety of these materials, we will remove those impediments, making it easier for them to be used. We believe that this strategic component is central to EPA's role in increasing appropriate beneficial use practices. While other federal agencies such as DOE and DOT play important roles in fostering beneficial use (e.g., demonstrating the efficacy of fly ash as a supplemental cementitious material in road construction), EPA's core mission is to protect human health and the environment. As a result, the public looks to us to assess and explain the safety of beneficial use practices.

C. Identify incentives and barriers to beneficial use

We continue to develop positive and productive relationships with our counterparts in industry and the states. Collectively, we are identifying the incentives and barriers to increased beneficial use that are relevant to each of the target materials. Collaboratively, we prioritize incentives and barriers, and identify roles and areas where each partner has the greatest leverage, as a means of increasing the value of incentives and minimizing the effects of barriers. Our partnerships allow us to prioritize and then collaborate on high impact projects that will tip the balance toward greater safe beneficial use.

D. Increase outreach and education on the benefits of source reduction, recycling, and beneficially using wastes/materials

Effective communication of relevant and useful information empowers the public to make choices that involve increased beneficial use. We will reach out to strategically selected audiences with information geared toward the key decision criteria facing those audiences. For example, county road engineers are key decisionmakers about the use of alternative materials in road construction, and therefore we plan to tailor certain outreach materials to this audience. We believe this purposeful type of outreach will have ripple effects, ultimately resulting in significant diversions of useful materials from land disposal.

V. Tools

Our discussion of means for achieving the four key strategies begins with our plans for several cross-cutting activities that will encourage beneficial use of all three focus materials (CCP, foundry sands, C&D debris), and then covers our plans that are specific to the individual focus materials. The material-specific plans reflect the differences in (1) the industries generating these materials, (2) the properties of the materials, and (3) our past history in promoting safe beneficial use of each of these materials. We provide a brief summary of these factors as a means of providing context for the material-specific plans. Note that the projects described in this section are not an exhaustive list of planned and ongoing activities; the regions have a number of additional relevant projects, and activities underway at the state level have not been compiled.

A. Cross-cutting activities

1. Strategy: identify environmentally safe and beneficial practices

We have several risk evaluation efforts underway. For instance, the Recycled Materials Resource Center (RMRC) is using EPA grant funds to assess the usefulness of the Industrial Waste Evaluation Model (IWEM)¹ to model potential releases from highway embankment and road base beneficial use applications. Ultimately we hope to release a

¹ IWEM is a tool for assessing management options for nonhazardous industrial wastes <<http://www.epa.gov/epaoswer/non-hw/industd/guide.htm>>.

version of IWEM that individuals can use to assess specific proposed applications. This hands-on tool will be extremely valuable to generators and prospective end-users. One of the benefits of this particular effort is that RMRC has extensive ties with a variety of states, regions, and the federal and state DOTs, which in turn strengthens both our ties with these partners and the real world validity of the modeling exercise. A key extension of this effort is to involve the appropriate tribal organizations.

2. *Strategy: identify incentives and barriers to increased beneficial use*

We are meeting regularly with several of the major industrial byproducts trade associations that are developing a broad coalition (similar to the National Recycling Coalition). A primary role for this coalition is the identification of incentives and barriers to increased beneficial use, and the subsequent prioritization of projects to strengthen incentives and remove barriers. Initial discussions with the trade associations are being held with Headquarters; subsequent conversations are planned to include regional and state participants.

Region 3 is leading the planning process for the 2005 Annual Byproduct Summit.² This is a proven and valuable conference that draws participants from many states, trade associations, and industry representatives, and has served as a valuable forum for the identification and vetting of incentives and barriers for increased beneficial use.

The beneficial use of these materials is largely governed by the beneficial use determination processes implemented at the state level. We are exploring several mechanisms for increased information sharing about these state determinations.

3. *Strategy: increase outreach and education on the benefits of source reduction, recycling, and beneficially using wastes/materials*

We are piloting a promotional effort to encourage large construction projects to use industrial byproducts (this project was previously identified as “Building America—the Top 20”). The pilot is the Marquette Highway Interchange reconstruction in downtown Milwaukee. We have developed a partnership with DOE, FHWA, states, and other interested parties to encourage recycling and the beneficial use of industrial byproducts and C&D debris as key elements of these highly visible projects. We will provide each region with our current list of construction projects and any updates, and will work with the regions to identify additional opportunities as those regions request. We are working with our industry partners to support increased beneficial use through a new program

Quick Start Idea: Selecting from HQ’s list of potential sites, or selecting another appropriate local project, each region will solicit ResourceSmart participation, taking the lead in contacting the project owners/managers and developing any publicity events, and sponsoring a workshop to promote beneficial use in the vicinity of the designated project.

² See <http://www.byproductsummit.com/2005/papers.html> for the proceedings of past Byproduct Summits.

being developed by Region 3 and FHWA: the Green Highway or Green Transportation Infrastructure initiative. This initiative “intends to weave together the environmental regulatory requirements, ecosystem and other stewardship and community preservation activities ... to create a comprehensive approach to sustainable transportation. The second part of the program is to recognize those DOT projects that exemplify stewardship and sustainability of all resources equally.” OSW has a critical role to play in this program: to ensure that beneficial use of industrial byproducts and C&D debris is recognized as a fundamental element of sustainable transportation systems.

We are developing an umbrella Web site that will serve as a portal to all of the beneficial use topics covered by OSW and the regions. This activity has been suggested at a number of beneficial use forums, and is one of the top priority suggestions put forward by the Portland Cement Association and the American Foundry Society.

B. Coal combustion products

The universe of facilities generating coal combustion products is largely defined by the coal-fired electric utility industry, with smaller amounts of materials being generated by non-electric utility companies. CCPs have been studied extensively by EPA through the Bevill determination process, resulting in a Report to Congress and Regulatory Determination.

The American Coal Ash Association (ACAA), the Utility Solid Waste Activities Group (USWAG), DOE, FHWA, and OSW are co-sponsors of the Coal Combustion Products Partnership. Over the last several years, this coalition has developed a dynamic suite of projects designed to increase the amount of coal combustion products that are beneficially used. These projects include a Challenge Program and barrier-breaking activities, designed to better understand obstacles to beneficial uses of CCPs and to identify both government and private initiatives to address those obstacles. In addition to C2P2 projects, the regions have initiated their own projects that also will increase beneficial use of CCPs. For example, Region 5 is holding a workshop on the use of coal ash in construction projects. Through the C2P2 program, we have developed a strategic, aggressive, and well-received plan designed to increase the beneficial use of CCPs. Early results from ACAA’s survey indicate positive changes in the CCP utilization rates (31.5 percent CCP utilization in 2001, 35.4 percent in 2002, and 38.1 percent in 2003).

1. Strategy: analyze and characterize the target material

We are working with ACAA to review the results of its survey, assessing trends in generation and beneficial use, as well as changes in reporting that may skew results (e.g., number of respondents), with the ultimate goal of tracking the partners’ progress toward achieving 45 percent CCP usage by 2008. We are discussing different ways to use the survey results as incentives, such as highlighting those respondents who already have achieved high utilization rates. Similarly, it may be possible to quantify the amounts of CCPs that pose particularly difficult barriers to being beneficially used due to location/market restrictions and CCP quality/variability.

2. *Strategy: identify environmentally safe and beneficial practices*

The Health and Environmental Impacts Booklet for Highways (“the Green Book”) has been sent to printing and will be released in May (a communication plan is being developed as well). The companion version of this booklet for Buildings is in the early planning phase. Both booklets focus on CCP usage. The Region 5 FGD on Farmland Grant will answer questions about the effectiveness of FGD land application in terms of no-till farming technique and environmental benefits related to greenhouse gas savings.

3. *Strategy: identify incentives and barriers*

We are conducting a series of State Reviews that examine CCP utilization practices and identify the specific factors that encourage or discourage beneficial use within each state. States perceive these reviews as highly valuable assessments that will increase beneficial use. Upon completion of the reviews (the review of Texas has been completed and released,³ and selection of the state for the second review is nearing completion), we will compile the findings regarding barriers and opportunities in a broader publication.

4. *Strategy: increase outreach and education on the benefits of source reduction, recycling, and beneficially using wastes/materials*

In collaboration with the C2P2 co-sponsors, this spring we are holding the first C2P2 Awards Program to recognize those partners who have made exceptional progress in promoting beneficial use of CCP. We continue to expand the existing C2P2 Web site, including the development of fact sheets on project activities and the collection and posting of additional case studies.

Quick Start Idea: Solicit new C2P2 members, with particular focus on potential customers of CCPs, including concrete manufacturers, state DOTs, and county transportation departments.

C. *Foundry sands*

Foundry sands are generated by metal casting facilities. Unlike CCPs, these sands have not been subject to extensive EPA assessments because they are not Bevill materials and have not been targeted for hazardous waste determinations. There has been significant university, state, and industry research on the use of sands and their characteristics. Under limited situations, foundry sands can exhibit hazardous waste characteristics. The majority of sands, however, pass the characteristics, and these non-hazardous sands are the primary focus of our efforts to increase beneficial usage.

The metal casting industry and foundry sand recyclers have worked with EPA and the states for a number of years demonstrating the beneficial use of sands. FIRST and AFS

³ <http://www.undeerc.org/carrc/html/review.html>

continue to gather and present data to support this effort. States that have approved certain beneficial uses also have data available.

1. *Strategy: analyze and characterize the target material*

We will develop a document that (1) serves as the repository of foundry sand characterization data and (2) establishes the baseline data for generation and recycling (in contrast to the rough estimates currently in use). We plan to work with the relevant trade associations, states, and universities to assess available data on the amounts and types of foundry sand generated and the properties of those various sands. We currently are evaluating data collated by Pennsylvania State University. AFS is conducting a member survey on sand volumes that will provide much-improved accuracy in the numerical estimates of generation and recycling rates.

2. *Strategy: identify environmentally safe and beneficial practices*

Region 5 is facilitating state and EPA review of the Agricultural Research Service (ARS) Foundry Sand Study's research protocols and results related to their assessment of the use of foundry sand as a soil amendment. This will help ARS to produce results that will be useful to state beneficial-use decisionmakers. We plan to conduct screening analyses of the analytical data collated by PSU. See also the cross-cutting IWEM assessment work discussed previously.

3. *Strategy: identify incentives and barriers*

Extensive work already has been conducted through summits and prior analyses to identify incentives and barriers. We are working closely with AFS and FIRST to select specific high-impact activities that we can conduct collaboratively. As an example, we plan to highlight case studies of successful beneficial use determinations made by several states for foundry sands as examples of how states have overcome common barriers to sand reuse.

4. *Strategy: increase outreach and education on the benefits of source reduction, recycling, and beneficially using wastes/materials*

Region 5 awarded a grant to FIRST to develop workshop modules to educate and encourage prospective foundry sand users (e.g., state departments of transportation). Modules will be based on the guidebook *Foundry Sand Facts for Civil Engineers*, which was developed by FIRST and the Federal Highway Administration. Some or all of the modules will be piloted by December 2005. A separate Region 5 grant to the Great Lakes Byproduct Management Association will explore state regulatory programs for blending foundry sands (and other byproducts) with organic materials to develop soil amendments. Developing soil amendments is a potential area for development of the foundry sands market. See also the cross-cutting outreach projects described previously.

D. C&D debris

C&D debris is generated under a wide range of circumstances, by large demolition companies and by individual homeowners, from roads, commercial and public buildings, and homes. Quantifying this waste stream accurately poses numerous challenges. EPA issued a major assessment of debris associated with buildings in 1998. Rulemakings and policies associated with lead-based paint and asbestos have impacted this industry.

Over the past 10 years, we have developed informal partnerships with the Construction Materials Recycling Association, the National Demolition Association, the National Association of Home Builders, the Associated General Contractors of America, the Army Corps of Engineers Construction Engineering Research Laboratory, and the Building Materials Reuse Association. We have collaborated on a variety of studies, workshops, papers, pilot projects, and conferences.

1. Strategy: analyze and characterize the target material

We are gathering information necessary to revise the 1998 study. The goal of this effort is to establish a comprehensive baseline of C&D debris generation and recycling rates (the 1998 study focused primarily on building debris) using a methodology that will allow for periodic updates using nationally reported economic data. We are developing a strategy for assessing generation and recycling rates for infrastructure and land clearing debris. We have established an external peer review team (consisting of representatives of the organizations listed above) to optimize our data and methodology.

2. Strategy: identify environmentally safe and beneficial practices

At the request of the Department of Defense/Army—for ultimate use by the public—we are developing guidance for the reuse and recycling of wood contaminated with lead-based paint. This guidance will be relevant to all of the military facilities, as well as to the public at large. We will complete a full draft of this document by June 2005.

Region 4, in collaboration with the Universities of Florida and Tennessee, is investigating risk questions associated with soil amendment beneficial uses of Type X drywall and medium density fiberboard (MDF). The results of these analyses will be made available through our Web sites and in journal publications. Resolving these questions will remove barriers and will identify the conditions under which these materials can be reused safely. See also the cross-cutting activities discussed previously.

3. Strategy: identify incentives and barriers

Common barriers to acceptance of new recycling methods are unfamiliarity and site-specific constraints. We are planning our third workshop at an Army installation in May 2005 that will explore the feasibility of deconstruction (rather than demolition) for buildings slated for removal at the installation. The workshop will have a strong emphasis on barrier removal. Similarly, Region 7 is working with the Army at Fort Leonard Wood

to facilitate the deconstruction of 200 houses and to develop markets that will allow them to recycle the materials generated from deconstruction.

4. *Strategy: increase outreach and education on the benefits of source reduction, recycling, and beneficially using wastes/materials*

We are analyzing the WasteWise Building Challenge (which encourages the recycling of C&D debris) to determine its effectiveness and to identify ways to re-invigorate it, enhancing its visibility and encouraging increased participation. We anticipate developing and marketing case studies of the

Challenge members who have availed themselves of the technical support provided through our grant to the Construction Materials Recycling Association (CMRA). We are reaching out to other WasteWise members who have not yet signed on to this Challenge, but who are reporting generation and recycling of C&D debris.

Quick Start Idea: Solicit new WasteWise members who will sign up for the Building Challenge. Highlight the successes of these new partners in local publicity events and through Web site features.

HQ worked closely with the regions to significantly expand the C&D Web site, integrating HQ, region, and state Web sites. The Web site (which went live in mid-March) serves as a rich portal to the numerous programs, case studies, analyses, and data designed to divert C&D debris from landfills into beneficial reuse. We will continue to update and expand the Web site as ongoing projects come to fruition.

Many of the regions have ongoing outreach projects that are designed to increase beneficial use of C&D debris:

- Region 5 is supporting Wastecap Wisconsin's development of a resource guide on the management of C&D debris, and is providing technical assistance to tribes on overall C&D debris management.
- Region 1 is working with the Northeast Waste Management Officials Association (NEWMOA) on issues related to interstate flow of C&D debris.
- Region 4 is co-hosting the 3rd Annual Deconstruction and Building Reuse Conference, as well as the 2nd Region 4 Construction and Demolition Debris Recycling Conference, this fall. Region 4 has provided the Florida DEP a grant to conduct three regional workshops, and (through an IWG grant to the Community Resource Center in Atlanta) is designing a house "for disassembly" to be built across from the MLK Memorial Park.
- Region 8 is providing training to a Montana reuse center to allow it to increase its capacity to divert donated materials, including C and D materials, from landfilling.

- Region 9 issued a grant to the Chartwell School, a non-profit school in Monterey, California, to design a school that will be a model of sustainable design. The project will document specific design for disassembly strategies by developing construction details and systems that can be removed as intact salvageable components and rating components on ease of deconstruction and documenting the process, systems, and materials used.

Priority and Toxic Chemicals Reduction Action Plan

I. Alignment with EPA's Strategic Plan

This action plan addresses elimination or reduction of priority chemicals and other chemicals of national concern from commercial products, waste streams, and industrial releases through pollution prevention, waste minimization, and recycling/reuse. There are two cross-EPA strategic goals and five corresponding GPRA targets that speak to this general toxic chemicals reduction goal. This action plan lays out a process for addressing the 31 chemicals in the “priority chemicals list,”¹ for supporting our strategic goals and 2008 GPRA targets set forth in the 2003–2008 EPA Strategic Plan, and for identifying and acting on other chemicals of national concern.

II. Goals

The specific strategic goals and GPRA targets supported by this action plan are as follows:

A. Agency goal 4

Healthy Communities and Ecosystems, Sub-objective 4.1.3: Reduce Chemical and Biological Risks. Corresponding Toxic Chemicals Reduction GPRA Targets:

- By 2008, decrease releases of persistent, bioaccumulative, and toxic (PBT) chemicals by 15 percent and toxic chemicals (including dioxin) by 10 percent as reported in the Toxic Release Inventory (TRI), compared to 2001 levels (managed by OPPT).
- Through 2008, reduce the potential for risks from leaks and spills by ensuring the safe disposal annually of 9,000 large capacitors and 5,000 transformers containing polychlorinated biphenyls (PCBs) (managed by OPPT).

B. Agency goal 5

Compliance and Environmental Stewardship, Sub-objective 5.2.2: Prevent Pollution and Promote Environmental Stewardship by Business. Corresponding Toxic Chemicals Reduction GPRA Targets:

- Reduce “priority chemicals” in hazardous and non-hazardous waste by 10 percent by 2008 using 2001 as baseline year (managed by OSW).

¹ See Appendix B for additional information.

- By 2006, reduce Toxic Release Inventory (TRI)-reported toxic chemical releases at federal facilities by 40 percent, from a baseline year of 2001 (managed by OPPT).
- By 2008, reduce by 40 percent TRI chemical releases to the environment from the business sector per unit of production (“Clean Index”), and reduce by 20 percent TRI chemicals in production-related wastes generated by the business sector per unit of production (“Green Index”), from the baseline year of 2001.

The 2001 baseline for OSW’s GPRA goal reflects releases of 23 chemicals in hazardous and non-hazardous waste streams as well as a subset of the 31 priority chemicals currently tracked by TRI.^{2,3} EPA recognizes that new and innovative programs will be necessary to meet the more ambitious goals for 2008, including an additional 10 percent reduction in “priority” chemicals and a broadening of the program scope to include releases of “priority” chemicals from non-hazardous waste streams.

As well as working toward the strategic goals and GPRA targets described above, we are collaborating with states and regions to identify other chemicals of national concern currently not included on the priority chemicals list and will establish targeted actions for chemicals through 2008. The list of 31 priority chemicals, of course, does not include many other chemicals of Agency concern—including some of the chemicals from OPPT’s broader toxic chemical focus in its GPRA goals, which will be targeted in this action plan. We expect to develop our initial approach to dealing with additional chemicals of national concern by the end of 2005.

III. Strategies for Achieving Goals

The RCC’s overarching goals for the Priority and Toxic Chemicals Reduction Action Plan were captured in either the Pollution Prevention Act, RCRA, or the longer-term goals articulated in “Beyond RCRA: Waste and Material Management in the Year 2020.” These goals have resulted in five important operating principles for the action plan. These principles include:

1. Substituting for priority and toxic chemicals with safer alternatives whenever possible;
2. Minimizing the amount of chemicals needed whenever substitution is not possible;
3. Maximizing recycling whenever minimization or substitution is not possible;

² The 2001 baseline expands to six the number of priority chemicals tracked by a current GPRA goal calling for the reduction of priority chemicals in *hazardous wastes* by 50% in 2005 using 1991 as a baseline year. However, this current 50% reduction GPRA goal was already met in 2003.

³ For additional information regarding the specific priority chemicals monitored by the 2001 or 1991 baseline years, see EPA’s 2001 Trends Report.

<<http://www.epa.gov/epaoswer/hazwaste/minimize/trends.htm>>

4. Emphasizing cradle-to-cradle chemical management;
5. Designing products to minimize exposures to and releases of such chemicals during manufacturing and use, as well as designing manufacturing processes to minimize the volume and toxicity of wastes produced.

In order to ensure a program that will effectively achieve our goals, we will include three other important operating principles. We will:

1. Identify assessment tools, and any available data needed to operate those tools, to better quantify the realized risk reduction from priority and toxic chemicals reduction programs;
2. Increase collaboration between EPA and state and tribal governments, manufacturers and users of chemicals, environmental and P2 groups; and
3. Complement this national plan with international efforts, such as cooperation with Canada and Mexico.

The RCC will advance two main strategies while focusing on several individual and interrelated projects and programs (tools) to accomplish our strategies. Each strategy is summarized below, and is supported by various programs. Some of the strategies and tools detailed below are already underway or are planned for near-term action. Although we will continue to develop additional and better strategies, we anticipate that most efforts for the next 3 years will fall under these two strategies:

A. Strategy one—reducing priority chemicals

Each EPA region implements a strategy that will bring about source reduction or recycling of priority chemicals that will contribute to meeting the GPRA goals of 10 percent addition reduction (against a 2001 baseline) between FY2005 and FY2008. Regional strategies will reflect the particular nature of a region's industry and that region's opportunities for source reduction and recycling.

Our primary tool for measuring those reductions will be the Priority Chemical Trends Report, which will focus on source reduction or recycling measured in the Toxics Release Inventory (TRI). One important element of this strategy will be to increase participation in the National Partnership for Environmental Priorities (NPEP). As part of this effort, we will systematically target the largest sources of priority chemicals in commerce. For example, in 2001, 77 million pounds of currently tracked priority chemicals were reported. Regions 4, 5, and 6 accounted for 73 percent of the total priority chemicals while Regions 1, 2, 3, 7, 9, and 10 accounted for 27 percent of the total.⁴ Tools to promote priority chemicals reduction include assessing databases showing the largest

⁴ See Appendix B for additional information.

potential sources of priority chemicals, direct contact with those higher-priority facilities through phone calls or site visits, NPEP workshops designed to present NPEP and its goals and benefits to potential partners, training sessions for state/regional recruiters that can include bringing in sector experts from other regions, and direct mailings to sectors of interest within the region.

Strategies may also focus on how to continue to work with existing partners, or with facilities that do not wish to join the NPEP, to increase reductions of priority and other chemicals through direct discussions and technical transfer of reduction strategies.

We also will examine the need for initiating efforts with specific industrial sectors at the national or regional level, and will create sector-wide outreach programs as needed. As part of this approach, we will work with OPEI's Sector Strategies group to include a priority chemical focus in those sectors where OPEI already has an ongoing relationship, and we will also look for opportunities among Performance Track facilities.

B. Strategy two—reducing other toxic chemicals of national concern

This component of the chemical reduction strategy will look for additional reduction opportunities for substances that are identified as being toxic and of national concern. This may include other persistent, bioaccumulative, and toxic chemicals (PBTs) or other chemicals known to cause environmental problems that are not included in the current priority chemicals list, e.g. such chemicals frequently found in waste streams or at cleanup sites. OSW and OPPT will work with the regions and the states to develop and implement, by the fourth quarter of FY2005, our initial set of priority actions for the RCC focused on additional toxic chemicals of national concern. This approach will specifically address the need for additional national-level activity and may draw on the universe of substances already identified as toxic under various federal environmental statutes. There may be circumstances where nationally significant issues exist in only one or two states or EPA regions, but are at a level of importance that justifies inclusion in the RCC national strategy.

Considerations in selecting any substance may include increased or widespread use; significant production volumes; availability of safer or greener alternatives; presence in common products that contribute to waste streams; frequent findings that the substance has created environmental cleanup problems; interest to more than one EPA program; the existence of available or likely pollution prevention, reuse, or recycling solutions; and other factors such as presence in humans or the environment that indicate potential significant exposure, release, or risk issues. The program will establish a process with relevant manufacturers, processors, users, and other stakeholders to identify, implement, and realize reduction opportunities.

Note that, in some circumstances, facilities may wish to join NPEP without committing to reducing either priority chemicals or chemicals identified as being of national concern. NPEP does allow such facilities to be partners.

IV. Tools

EPA's ability to attain the goals in the Priority and Toxic Chemicals Reduction Action Plan will depend on the participation of federal agencies, regions, states, tribes, local governments, industries, and the general public in partnerships aimed at reducing the amount of priority chemicals as well as other chemicals of concern in commerce and in wastes, and increasing recycling where they remain in production. Below is a collection of core tools—namely, programs, initiatives, interrelated projects, and targeted efforts that we will use to implement this action plan. These tools provide the means to facilitate public and private partnerships that can deliver results toward the reduction of priority chemicals and other chemicals of national concern later added under this action plan.

A. *Voluntary partnership programs*

1. *National Partnership for Environmental Priorities program*

The NPEP program is the RCC's most direct tool for "beyond compliance" management of the chemicals targeted by the Priority and Toxic Chemicals Reduction Action Plan, and forms a significant foundation upon which EPA will build its chemicals reduction and management plan.⁵ EPA recruits partners to NPEP who pledge reductions of targeted chemicals through source reduction and/or increased recycling efforts and then sets target deadlines to achieve those reductions. As NPEP grows, it will complement existing state programs to provide a framework for reductions in priority and toxic chemicals.⁶

2. *Benchmark successful (e.g., Region 3) recruitment models and build similar expertise*

With assistance from OSW and OPPT, state and regional staff and tribes will develop and host workshops that emphasize one or more of the following themes:

- Developing onsite targeted reductions in priority and toxic chemicals, including assessment of the economics of such reductions
- Using the grant process to obtain commitments from state and tribal partners on NPEP goals
- Assembling an EPA/state/tribal Implementation Team that can recruit and follow up on NPEP partners
- Developing a communications and outreach strategy to recognize completion of partner reduction goals (e.g. press events, recognition ceremonies)

⁵ The NPEP Program was formerly named the National Waste Minimization Partnership Program.

⁶ Please visit the NPEP Web site at <http://www.epa.gov/epaoswer/hazwaste/minimize/index.htm>.

3. *Build relationships with existing state pollution prevention programs and tribal pollution prevention activities, and develop joint NPEP and state program targeting and recruitment goals*

There are various methods by which EPA regions can partner and bolster existing state and tribal programs. For example:

- Work with states and tribes to leverage their ongoing pollution prevention efforts to obtain new NPEP partners. Link regional NPEP Web sites to state and tribal Web sites. Conduct periodic joint outreach to industry, with states and tribes leveraging resources they have dedicated to this activity.

B. Targeted efforts to reduce priority and toxic chemicals

1. Community-based initiative

We will identify the location of facilities reporting higher volumes of priority and toxic chemicals using the TRI and Biennial Report System (BRS) data.⁷ Facility identification information from the Waste Minimization Trends Report⁸ will be geographically mapped using the Agency's available geographic analysis and visualization tools. Facilities reporting higher volumes of priority and toxic chemicals located proximate to communities (as identified by the Community Action for a Renewed Environment program and regional analysis; EPA will also identify candidates by identifying such facilities located proximate to large population centers or tribal lands) will be identified in the NPEP targeting data. Regions will be encouraged to use these data to pursue those facilities for enrollment in the NPEP program or initiate other appropriate efforts as outlined in this chapter.

2. Chemical-specific actions

EPA/state/tribal efforts may call for a more cohesive and concerted national or regional effort to promote reductions of priority and toxic chemicals that (due to a combination of their toxicity, volume, exposure potential, and other factors) suggest the need for such efforts. In such cases, chemical-specific actions may be sponsored by OPPT, OSW, a region, a state, or a trade organization to educate key stakeholders and voluntary partners about the health and environmental problems that can arise from the exposure and release of a specific priority chemical or toxic chemical and the specific actions to prevent pollution or to manage that chemical in an environmentally sound manner. For example, EPA has identified three chemical-specific actions under this Priority and Toxic Chemicals Reduction Action Plan.⁹

⁷ Information on the Biennial Report is available at <http://www.epa.gov/epaoswer/hazwaste/data/index.htm>.

⁸ This report may be accessed at EPA's Web site:
<http://www.epa.gov/epaoswer/hazwaste/minimize/trends.htm>.

⁹ See Appendix B for additional information.

- **First Action: “Issue and Implement EPA’s Roadmap for Mercury.”** EPA’s *Roadmap for Mercury* will describe the Agency’s current and future actions to address mercury and inform the public about the wide range of actions taking place to reduce mercury exposure. *EPA’s Roadmap for Mercury* will also serve as a resource for tracking future actions and progress toward EPA’s goal to reduce the presence of mercury in the environment. *EPA’s Roadmap for Mercury* identifies six focus areas for future action to ensure a holistic approach for addressing mercury: (1) further reducing mercury releases to air, water, and land; (2) further reducing mercury uses, which later result in releases to the environment; (3) enhancing risk communication; (4) safely managing commodity-grade mercury supplies; (5) conducting research and monitoring; and (6) engaging in multilateral and bilateral agreements to facilitate global mercury reductions.

Second Action: “Increase Early Retirement of PCBs.” Spearheaded by OPPT, this action will encourage early retirement of electrical equipment containing PCBs through a national voluntary phaseout program. The effort will be approached in a manner consistent with the goals of the Stockholm Convention on Persistent Organic Pollutants (POPs).¹⁰ OSW will work with OPPT to promote this effort among NPEP and non-NPEP members.

Third Action: “Get the Lead Out.” OPPT is making efforts to reduce or eliminate lead in a variety of products. These include efforts in the Design for the Environment (DfE) Program, a voluntary partnership program in which OPPT works with industry to assist in integrating health and environmental considerations into business decisions to produce products and processes that are cleaner, more cost-effective, and safer for workers and the public. Several of the DfE partnerships have focused on alternatives to lead usage. A life cycle assessment was recently completed on alternatives to tin/lead solder. The U.S. electronics industry is facing legislative and market pressure to phase out the use of tin/lead (SnPb) solders and switch to lead-free alternatives. The transition to lead-free solders presents a significant opportunity for risk reduction through the reduced use of lead. Worldwide estimates of SnPb solder use in 2002 are over 176 million pounds. The DfE Lead-Free Solder Partnership has conducted a study of life-cycle environmental impacts of SnPb and several lead-free solder alternatives. The study results will provide the industry with an objective analysis of the life-cycle environmental impacts of leading candidate alternative lead-free solders, and will allow industry to consider environmental concerns along with the traditionally evaluated parameters of cost and performance. This assessment will also allow industry to redirect efforts towards product and processes that reduce solders’ environmental footprint, including energy consumption, releases of toxic chemicals, and potential risks to human health and the environment. DfE project partners also conducted a Cleaner Technology Substitute Assessment (CTSA) to evaluate lead-free surface finish alternatives to the standard hot air solder leveling (HASL) process for printed wiring boards, or PWBs. (PWBs, also called printed circuit boards, provide the physical structure for mounting and holding electronic

¹⁰ For additional information, see: <<http://www.epa.gov/oppfead1/international/pops.htm>>

components, as well as providing the electrical interconnection between the components. PWBs are the foundation for virtually all of the world's electronics.) The results indicate that the alternative finishes perform as well as or better than HASL, and some of the alternatives appear to pose fewer occupational risks, use less water and energy, and cost less. OSW will identify new targets for this program, starting with an initiative to eliminate the use of lead in tire balancing weights as part of the priority chemical reduction efforts. OSW will also collaborate with OPPT to educate and promote the use of lead-free soldering formulation alternatives among NPEP and non-NPEP members engaged in the manufacturing/repair of electronic equipment. Other "get the lead out" actions may also be pursued by OSW and OPPT.

C. Multi-chemical reduction actions

The federal government, especially EPA, should lead by example (as mandated by Executive Order 13148) in efforts to reduce or eliminate priority and toxic chemicals of national concern for products produced and wastes generated. Within EPA, OPPT has had the lead for identification of priority chemicals to be eliminated from federal use. OPPT has worked with the Office of the Federal Environmental Executive and the Office Director's Multimedia Pollution Prevention Forum (M2P2) to reach consensus on the list of chemicals of concern: lead, mercury, cadmium, naphthalene, and PCBs. Consistent with EO 13148, EPA will now initiate a special federal recruitment program to reduce the presence and use of these chemicals by the federal government and the early retirement of chemicals already in use. For example, EPA will encourage federal agencies to pursue two or more of the following actions:

- Harness the power of federal procurement to eliminate these five priority chemicals from products purchased by the federal government.
- Replicate EPA's blanket card purchase agreement to procure green or environmentally preferable products.
- Review acquisition and procurement standardized documents and identify opportunities to eliminate or reduce use of priority chemicals.

EPA will work with federal facilities and agencies to replicate the use of our environmentally preferable purchasing program (Green Purchasing Program) to identify "greener" products. EPA's Environmentally Preferable Purchasing (EPP) program (under OPPT's leadership) takes into consideration the environmental impacts of toxic chemicals. The EPP program will work with a variety of federal agencies, including the Department of Defense, the General Services Administration, and the Department of the Interior, to identify where government purchasing can be leveraged to reduce chemical use or promote use of safer alternatives. This program is also working with the Agency's Office of Administration and Resources Management to use safer chemicals within EPA facilities—specifically, switching over time to green cleaning chemicals. The EPP program has been working with GSA and DOI to address indoor air quality and worker

health and safety concerns through the development of model janitorial service contracts. In addition, the EPP program provides guidance for the development of green cleaning product standards and specifications. These and other purchasing tools can be found in the EPP Database <<http://www.epa.gov/oppt/epp/database.htm>>.

D. OPPT's Hospitals for a Healthy Environment Program integration

OPPT's H2E Program has enrolled approximately 1,000 health care facilities and hopes to double enrollment by 2007. The initial focus has been on mercury reduction. Now the H2E program will be used to increase partner awareness of priority and toxic chemicals of national concern as well as other chemical reduction priorities so that reduction programs for these chemicals in health care facilities can be assessed, developed, and implemented.

VI. Tools to Build Cross-Organizational Capacity

A. OPPT's technical tools and expertise

OPPT has a variety of efforts underway to encourage reduction of priority and toxic chemicals through approaches that apply the Office's technical tools and expertise. These include the Green Suppliers Network,¹¹ Sustainable Futures,¹² Design for the Environment,¹³ and Green Chemistry.¹⁴ These tools involve encouraging industry to identify and develop new chemicals or alternatives that are cost-effective, meet performance needs, and are safer or greener, and develop and apply best practices where such alternatives are not available.

B. Explore using TSCA authorities

EPA will conduct a preliminary market analysis of mercury switches, relays, and measurement devices to identify candidate product manufacturers to partner with the Agency to reduce risks. Applying its experience or building upon successful state regulatory programs, EPA will consider further risk reduction mechanisms using TSCA or a combination of voluntary and TSCA approaches—for example, TSCA section 5 significant new use rules and/or TSCA section 6 control regulations and other authorities, as appropriate for action on other priority and toxic chemicals of national concern (e.g., action to remove lead from tire weights; action to result in early retirement of PCB-containing devices).

C. Scale up successful local/regional reduction programs

Identify successful small-scale programs that may be appropriate for national (or multi-regional) implementation. Use state, tribal and EPA regional programs as examples of

¹¹ For information, see <<http://www.epa.gov/greensuppliers/index.htm>>.

¹² For information, see <<http://www.epa.gov/opptintr/newchems/sustainablefutures.htm>>.

¹³ For information, see <<http://www.epa.gov/dfe/about/index.htm>>.

¹⁴ For information, see <<http://www.epa.gov/opptintr/greenchemistry/>>

efforts that can be scaled up to the national level to reduce priority and toxic chemicals of national concern.

D. Research needs

As the Priority and Toxic Chemicals Reduction Action Plan is implemented, research needs will be continuously identified. The needs will become clear once sources of priority and toxic chemicals of national concern are identified via NPEP recruitment and the other partnership programs. We expect to identify reduction targets that subsequently reveal gaps in actual reduction capabilities. We see a clear role for EPA: to sponsor research where no viable solution to the release of these chemicals into the environment currently exists.

Such areas for research may include manufacturing process modifications that lead to priority and toxic chemical reductions, safer substitutes for specific uses, safe long-term storage methods (e.g. long-term mercury storage); and advanced reuse/recycling opportunities to reduce priority and toxic chemical use. As they are identified, these kinds of gaps in information or technology will be presented to the Office of Research and Development for consideration in the Agency's research agenda.

Research could build upon efforts in existing programs such as the Green Chemistry Program. The Presidential Green Chemistry Challenge, for example, is a two-track program that recognizes efforts in the design, development, and implementation of greener product and process substitutes and supports research into the development of greener alternatives where none exist for priority and toxic chemicals of national concern.

VII. International Cooperation

Our international activities, globally and regionally, complement our domestic programs. We participate in activities related to chemical testing, assessment, and/or management, pollution prevention, and the development and implementation of international agreements, as well as support capacity building for developing countries and countries with economies in transition. Examples of current activities that will support the goals of this plan include the commitment to develop partnerships with international organizations, non-governmental organizations and the private sector to reduce mercury pollution as agreed at the 23rd United Nations Environmental Program Governing Council meeting. At the North American level, we have an on-going project with Mexico and Canada to collaborate on the sound management of chemicals, including pollution prevention in North America.

Green Initiatives—Electronics

I. Scope

The National Electronics Action Plan addresses environmental concerns along the entire life cycle of electronics, including design, operation, reuse, recycling, and disposal of equipment. This action plan will focus initially on computers (PCs), televisions, and cell phones.

A. *Nature of challenge*

Approximately 2 million *tons* of used electronics, including computers and televisions, are discarded each year. An estimated 128 million cell phones are retired from use each year. This National Electronics Action Plan will work to reduce the potential adverse effects of these discarded products by applying a life cycle approach to the problem.

B. *Purpose of action plan*

The action plan will:

- Develop priorities and targets for the work of OSW and OPPT, as well as their regional counterparts;
- Integrate OSW's and OPPT's activities on electronics into a broader set of EPA activities;
- Ensure that this work is coordinated as effectively as possible, including extension of efforts to less urbanized settings (among them Indian Country, as appropriate);
- Support important ongoing activities; and
- Track and evaluate progress in the projects and activities agreed upon.

II. Goals and Objectives

The overall goals for electronics are to:

- Foster environmentally conscious *design and manufacturing*, including reducing or eliminating higher-risk materials (e.g., priority and toxic chemicals of national concern) in electronics products at the source.
- Increase *purchasing and use* of more environmentally sustainable electronics; and
- Increase safe, environmentally sound *reuse and recycling* of used electronics.

A. *Five-year goals*

1. *Design and manufacturing*

- Electronic products will use significantly lower-risk materials.
- The amounts of materials used will be reduced to the minimum needed to meet technological or performance requirements if use of significantly lower risk materials is not possible.
- The electronics we buy will be designed to be readily reusable or recyclable at the end of their first useful life (this includes improved design and manufacturing processes, as well as building for ultimate dismantling and reuse).
- There will be robust markets for the materials coming from recycling of used electronics because of the design changes made to electronics.

2. *Purchasing and use*

- Environmentally sound government purchasing of electronics products will be standard practice.

3. *Reuse and recycling*

- It will be as easy for consumers to recycle or find a reuser for their TV or PC as it is for them to buy one.
- Reuse, recycling, and disposal of electronics will be a safe and environmentally sound practice across the nation.

B. *Numerical targets*

One of the first steps in development of this action plan will be the establishment of measurable numerical targets for each of the broad national goals identified above.

Possible targets include:

- C Measuring amounts of priority and toxic chemicals of national concern that manufacturers have removed from products through redesign. The specific materials addressed will be identified in consultation with stakeholders.
- C Targets for the number of computers and TVs recycled or reused nationally.
- C The nature and volume of electronics handled by states, tribes, and community electronics recycling programs.

III. Means and Strategies

The means and strategies are classified under the three broad life cycle categories identified above: design and manufacturing, purchasing and use, and reuse and recycling. Some of the specific means and strategies, such as the Federal Electronics Challenge, address several of these life cycle stages. We also have included a program development category.

A. Design and manufacturing

1. EPEAT (Electronics Product Environmental Assessment Tool)

EPEAT is an environmental procurement tool designed to help institutional purchasers in the public and private sectors evaluate, compare, and select desktop computers, laptops, and monitors based on their environmental attributes.

The EPEAT will evaluate electronic products according to three tiers of environmental performance—bronze, silver, and gold. The assessment tool will be structured to allow manufacturers to self-declare, via a Web-based interface, that their specific products meet EPEAT criteria. For each criterion, producers must, on request of the EPEAT organization, provide a specified set of verification data to demonstrate EPEAT conformance.

EPEAT Performance Measures will be developed within the next year, and include:

- C Purchasers can measure the environmental benefit of their EPEAT purchases using the environmental benefit calculator.
- C X percent of all product models meet the EPEAT standard.
- C X number of products are certified by EPEAT.
- C X number of federal agencies use EPEAT as a mandatory criterion for all of their computer purchasing.
- C X number of tribes, states, and local governments have adopted EPEAT.
- C X number of other entities have voluntarily adopted EPEAT.

The EPEAT implementation team is working to identify a host organization to take over implementation responsibilities, solicit public comment on the draft criteria, and develop a marketing plan to encourage the use of the standards when completed.

2. OPPT's Design for the Environment Program

DfE is a voluntary partnership program in which OPPT works directly with industry to assist in integrating health and environmental considerations into business decisions to produce products and processes that are cleaner, more cost-effective, and safer for workers and the public.

Over a 10-year period, DfE has completed four major assessments with the electronics industry, utilizing both cleaner technology substitute assessment (CTSA) and life-cycle assessment (LCA) methodologies. The first two studies focused on printed wiring boards used in electronics. PWBs, or printed circuit boards, provide the physical structure for mounting and holding electronic components, as well as providing the electrical interconnection between the components. PWBs are the foundation for virtually all of the world's electronics. In the first study, DfE compared the health and environmental risks, performance, and cost of the electroless copper process and six promising alternative technologies that use direct metalization. The results showed that the alternatives perform as well or may pose less risk to workers and the environment. The project partners also conducted a second assessment to evaluate lead-free surface finish alternatives to the standard HASL process. The results indicate that the alternative finishes perform as well as or better than HASL, and some of the alternatives appear to pose fewer occupational risks, use less water and energy, and cost less. The third study, the first LCA, compared environmental impact of technologies that are used in desktop computer monitors—namely, cathode ray tubes (CRT) and liquid crystal displays (LCD). This project generated data to assist original equipment manufacturers (OEMs) and suppliers in the electronics field in incorporating environmental considerations into their decisionmaking processes and identify areas for improvement. The fourth study, in the process of completion is another LCA focusing on comparing alternatives to lead solder. In the current LCA on alternatives to lead solder, the electronics industry contributed significant funding to the study, as well as technical expertise. More information can be found at <http://www.epa.gov/dfe>.

Over the next year, the DfE Program will finalize the solder LCA report and disseminate the results to the electronics industry, so that manufacturers can use the information to make environmentally informed design decisions regarding the use of alternative solders. DfE is also in the process of initiating a new LCA study with the cable and wire industry.

B. Purchasing and use

Increase purchasing and use of more environmentally sustainable electronics.

1. Federal Electronics Challenge (FEC)

The FEC promotes proper design, management, and disposal practices to protect the environment, and includes acquisition practices that make economic sense and save taxpayer dollars. Under the FEC, federal agencies are encouraged to:

- Procure equipment with reduced priority or toxic chemical content, greater energy efficiency, and increased reused and recycled content, as well as equipment designed to be more readily disassembled and recovered at end of life;
- Implement best life-cycle management practices for electronic equipment and share identified best practices with those outside the federal government; and
- Promote the reuse, demanufacturing, and recycling of obsolete electronic equipment.

The FEC was announced by the Office of the Federal Environmental Executive (OFFE) on November 15, 2004. At that time eleven federal departments and agencies signed a Memorandum of Understanding (<http://www.federalelectronicchallenge.net/tools/memorand.pdf>) to develop and promote common strategies for using environmentally sustainable technologies and practices to improve the quality, performance, and environmental management of federal electronic assets throughout their life cycle. EPA and OFEE are working with federal agencies at the national level in Washington, D.C., with HQ taking the lead to develop agreements with GSA and the senior management of the targeted federal agencies. When such agreements are in place, the regions can more effectively assist federal facilities in carrying out their portion of the electronics challenge.

FEC has the following goals for 2008:

- 100 percent of units purchased by eligible FEC partners include multiple environmental attributes (e.g. energy efficiency, reduced toxicity).
- 100 percent of eligible FEC Partners have Energy Star features enabled on 95 percent of units.
- 100 percent of units exceeded by eligible FEC partners have average life spans of 4 years or greater.
- 100 percent of non-reusable units are recycled by eligible FEC Partners using Environmentally Sound Management.

C. Reuse and recycling

Increase safe, environmentally sound reuse and recycling of used electronics.

1. Plug-In to eCycling

Plug-In to eCycling is a consumer electronics campaign working to increase the number of electronic devices collected and safely recycled in the United States. Launched by in January 2003, Plug-In to eCycling focuses on three major areas:

- Providing the public with information about electronics recycling and increasing opportunities to safely recycle old electronics, such as the *Safe Recycling Guidelines*.
- Facilitating partnerships with communities, electronics manufacturers, and retailers to promote shared responsibility for safe electronics recycling.
- Establishing pilot projects to test innovative approaches to safe electronics recycling.

Plug-In Performance Measures are to increase the percentage of the consumer electronics market that provides recycling services to 50 percent in 2 years, and to 80 percent in 5 years. We will reassess these targets as part of a broader national process to develop a target for the number of computers recycled nationally, as discussed earlier.

2. *Safe recycling guidelines*

Safe Recycling Guidelines have been developed and are being marketed as part of our Plug In to eCycling program. We will reassess these guidelines as necessary, in the context of developing standards and processes for electronics recycling certification and recycling audits.

3. *Complete the CRT rule*

Many cathode ray tubes (CRTs) and pieces of mercury-containing equipment may exhibit a hazardous waste characteristic if tested under the Toxicity Characteristic Leaching procedure (TCLP), and therefore may be hazardous wastes under RCRA if discarded. EPA has proposed an exclusion from the definition of solid waste that would simplify recycling requirements for used CRTs and glass removed from CRTs sent for recycling. EPA also proposed streamlining management requirements for used mercury-containing equipment. EPA will complete these rules during FY 05.

4. *Basel Convention Mobile Phone Partnership Initiative*

In December 2002, the 10 major mobile phone manufacturers worldwide—LG, Matsushita (Panasonic), Mitsubishi, Motorola, NEC, Nokia, Philips, Samsung, Siemens, and Sony Ericsson—signed a declaration to work under the Basel Convention (administered by the United Nations Environment Program) to improve the environmentally sound management of end-of-life mobile phones. We will continue working with stakeholders implementing this collaborative effort.

D. Program development

1. National electronics meeting

On March 1 and 2, EPA brought together approximately 200 people from state/local agencies, electronics manufacturers and retailers, and nonprofit organizations to discuss lessons learned to date and chart next steps for cell phones and electronics environmental efforts throughout the life cycle of these products. The meetings identified a long series of potential action items, including standards and processes for electronics recycling certification and recycling audits. EPA is taking the lead in convening the discussion for developing the system for certifying recyclers. Other potential action items include development of an electronics Recycling Consortium to build infrastructure for collection, reuse, and recycling of used electronics. In the next year, EPA will identify specific priorities and activities for involvement, as well as an approach for tracking progress. In addition, EPA will coordinate involvement with appropriate tribal organizations.

2. Data and public information

EPA is often expected to be the source of national data on electronics generation and management, and on the environmental impacts and costs/benefits of increased reuse/recycling. We need to continue to be a better source and evaluator of this data. In the next year, information will be developed to assess progress for individual projects, and to assess whether these projects are helping us to attain the overall Agency goals.

Example: The Polymer Alliance Zone (PAZ) Marcee Project is partnering with EPA's Plug In program to use its advanced Web-based data platform to receive and array data from Plug In to eCycling pilot projects for viewing and analysis by anyone who is interested in this information. This could form the basis for a national, publicly available database on information from electronics collection pilots and projects from around the country, including costs, types of materials collected, and volumes.

3. State and tribal involvement

Many states and tribes have already enacted legislation or have developed programs dealing with electronics issues, and we can learn many valuable lessons from those. Some of the specific tasks for the next year include:

- C Ensuring that we have consulted with key organizations and state and tribal officials on future directions and to get input on efforts that have worked or not worked;
- C Developing, if appropriate, model legislation appropriate to the tribes;
- C Identifying appropriate steps in development and implementation of this plan;

- C Working on collaborative steps for data gathering; and
- C Identifying common or complementary approaches to implementation, for example the CRT rule or extending successful state or tribal programs to a regional or national level where practicable.

4. *International*

We are continuously looking at synergies with international activities through implementation and assistance related to Multilateral Environmental Agreements, cooperative work of the OECD, work within regions, and bilateral effort. For example, we are exploring options for trilateral cooperation with Mexico and Canada through our work under the Commission for Environmental Cooperation (CEC). The North American Pollution Prevention Partnership (a partnership of the Canadian, Mexican, and U.S. Pollution Prevention Roundtables and the CEC) developed an initiative on clean electronics in North America with the goal of facilitating the transition to new competitive global standards, such as those in the European Union, China, and Japan, while at the same time helping to sustain an important economic sector and advance clean production strategies in North America. In 2005, the CEC activities will be further developed and we will see better integration of this plan and the CEC work.

We are also exploring our options for affecting export practices, because computers shipped overseas for recycling or reuse are not subject to the same environmental controls that operate domestically. In the next year and beyond, we will consider available options and take specific actions that will improve environmental management of exported electronics equipment.

5. *Regional roles*

By July, EPA HQ and regional offices will reach agreement on lead roles, specific assistance activities, resources, and priorities. Potential activities include:

- *National Program Development:* Participating in regulation development, development of national projects, such as EPEAT and DfE, or collaborative projects identified as a result of the national meeting.
- *Federal Electronics Challenge:* Actively promoting the programs with other federal agencies via conferences and meetings, and working with federal agencies to assist in implementation, using the Recycling Electronics and Asset Disposition (READ) contract as appropriate. The Office of the Federal Environmental Executive has indicated that federal agencies that became FEC partners could expect to receive assistance, information, and recognition for electronics stewardship efforts.

- *Internal support:* Working to promote environmentally sound purchasing, use, recycling, or disposal within regional offices through FEC and supporting implementation of several Executive Orders on Greening of Government.
- *EPEAT:* Reaching out to institutional purchasers (government, academia, large businesses, hospitals, etc.) to promote the use and adoption of the EPEAT criteria—potentially through the existing EPP, H2E, Green Suppliers Network (GSN), and other programs.
- *Coordination with states, tribes, and local government:* Following development in state pilot projects, programs, and legislation and serving as a point of contact for information and assistance.
- *Information sharing:* Working with a network of regional contacts on electronics to update HQ and other regions on their projects, activities, and developments.

APPENDIX A:
LIST OF RCC PROJECTS, DESCRIPTIONS, AND WEB
ADDRESSES

<<<<<<<<<<<<<BEING DEVELOPED>>>>>>>>>>>>>

APPENDIX B:

PRIORITY AND TOXIC CHEMICALS REDUCTION

<u>SECTION</u>	<u>CONTENT</u>
PART I.....	SNAPSHOTS OF THE 2001 BASELINE
PART II.....	LIST OF PRIORITY CHEMICALS
PART III.....	CHEMICAL-SPECIFIC ACTIONS

PART I—SNAPSHOTS OF THE 2001 BASELINE

Part I provides a breakdown of priority chemicals reported in 2001 by region, by top seven (high-quantity) priority chemicals, and by the top industrial sectors behind lead and naphthalene reporting.

REGIONAL: In 2001, 77 million pounds of priority chemicals were reported. Regions 4, 5, and 6 accounted for 73 percent of the total priority chemicals while Regions 1, 2, 3, 7, 8, 9, and 10 accounted for 27 percent of the total. See Figure 1 for a breakdown by region.

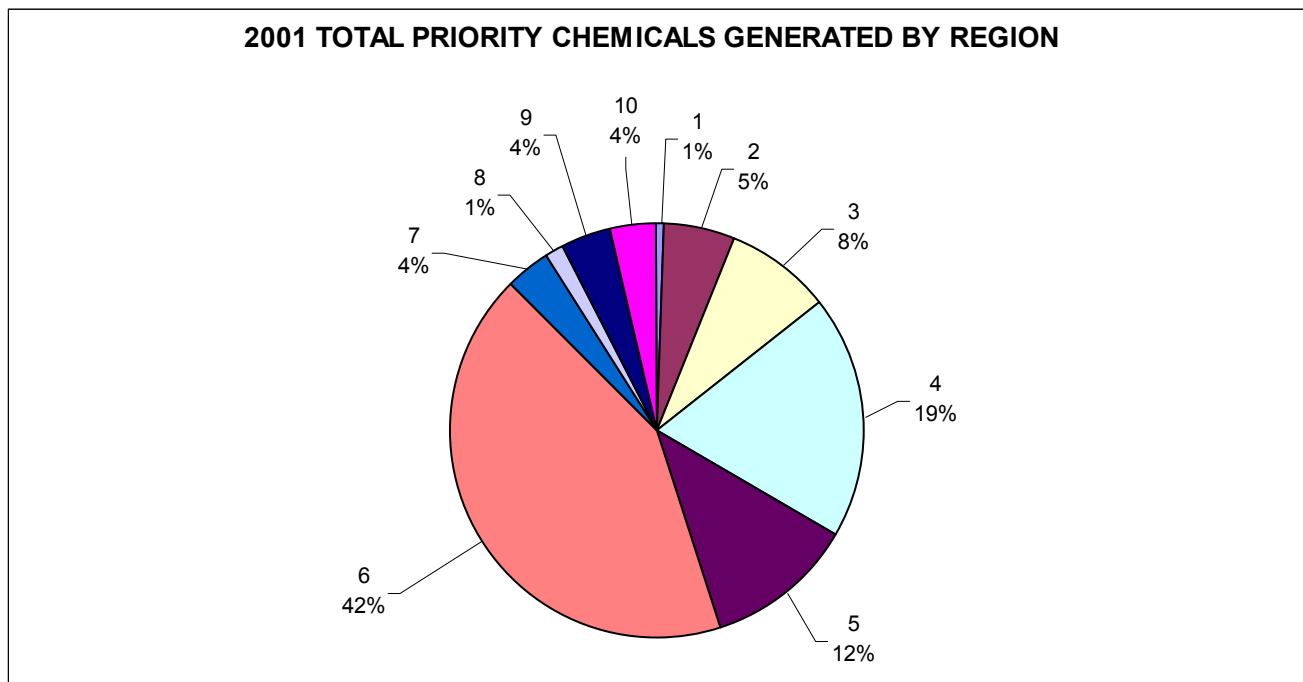


Figure 1

TOP CHEMICAL QUANTITIES: Figure 2 shows that seven high-quantity priority chemicals accounted for 95 percent of 77 million pounds of all priority chemicals reported in 2001. The top seven high-quantity priority chemicals are (1) lead and lead compounds (41 percent), (2) naphthalene (15 percent), (3) polycyclic aromatic compounds (14 percent), (4) hexachloro-1,3-butadiene (9 percent), (5) hexachlorobenzene (7 percent), (6) hexachloroethane (6 percent), and (7) 1,2,4-trichlorobenzene (3 percent). As in the 1991 baseline, lead and naphthalene are shown as the two top reduction priority chemicals throughout 2008.

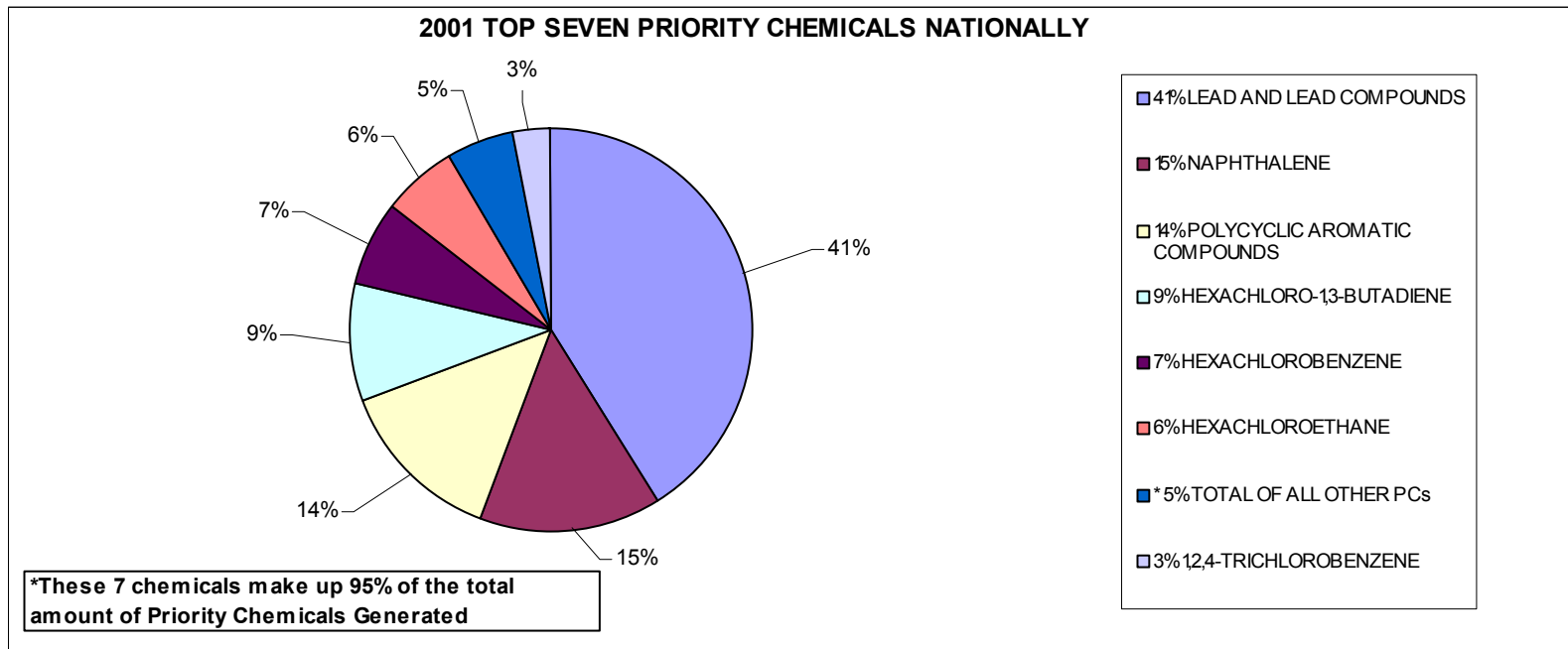
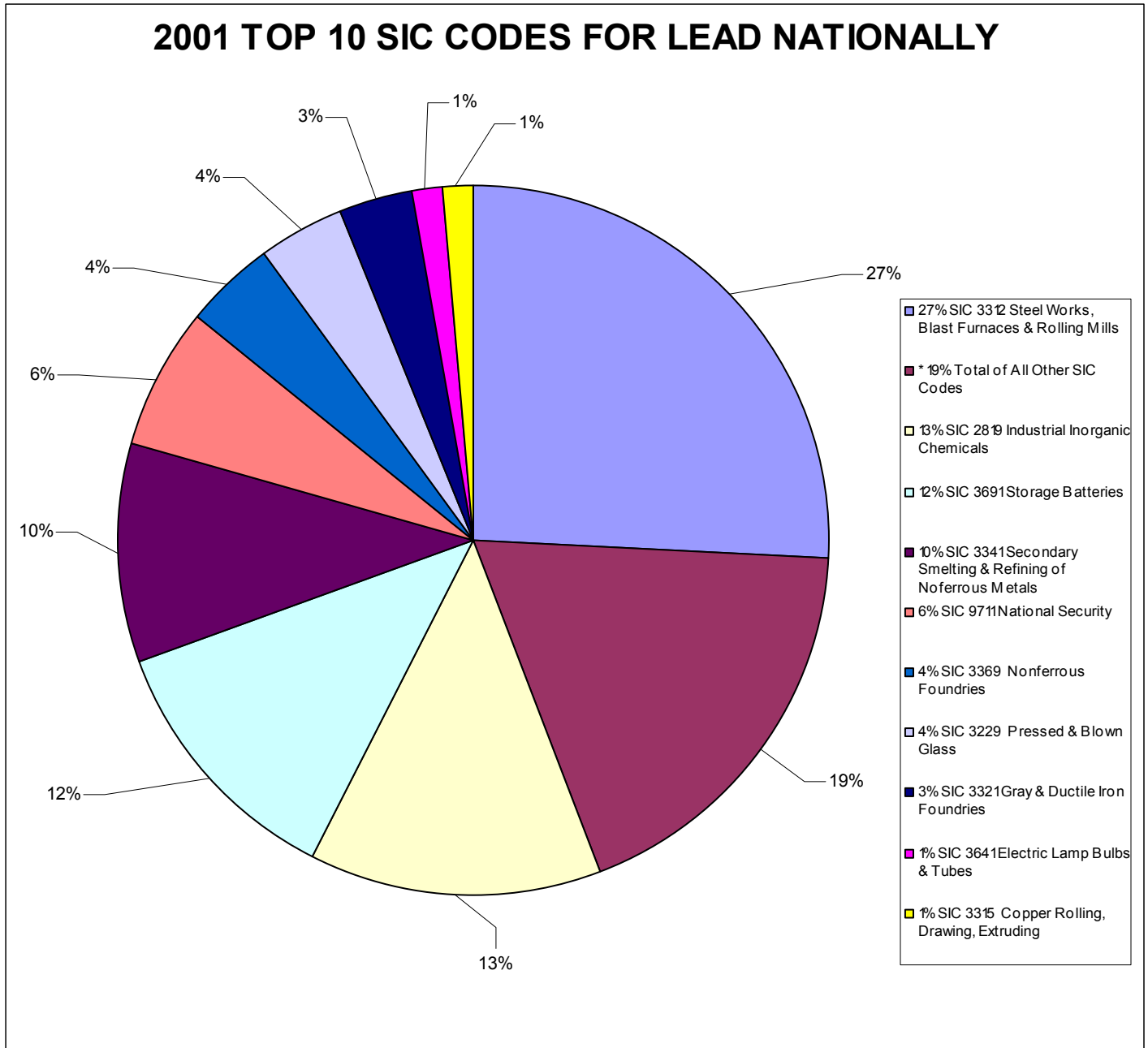


Figure 2

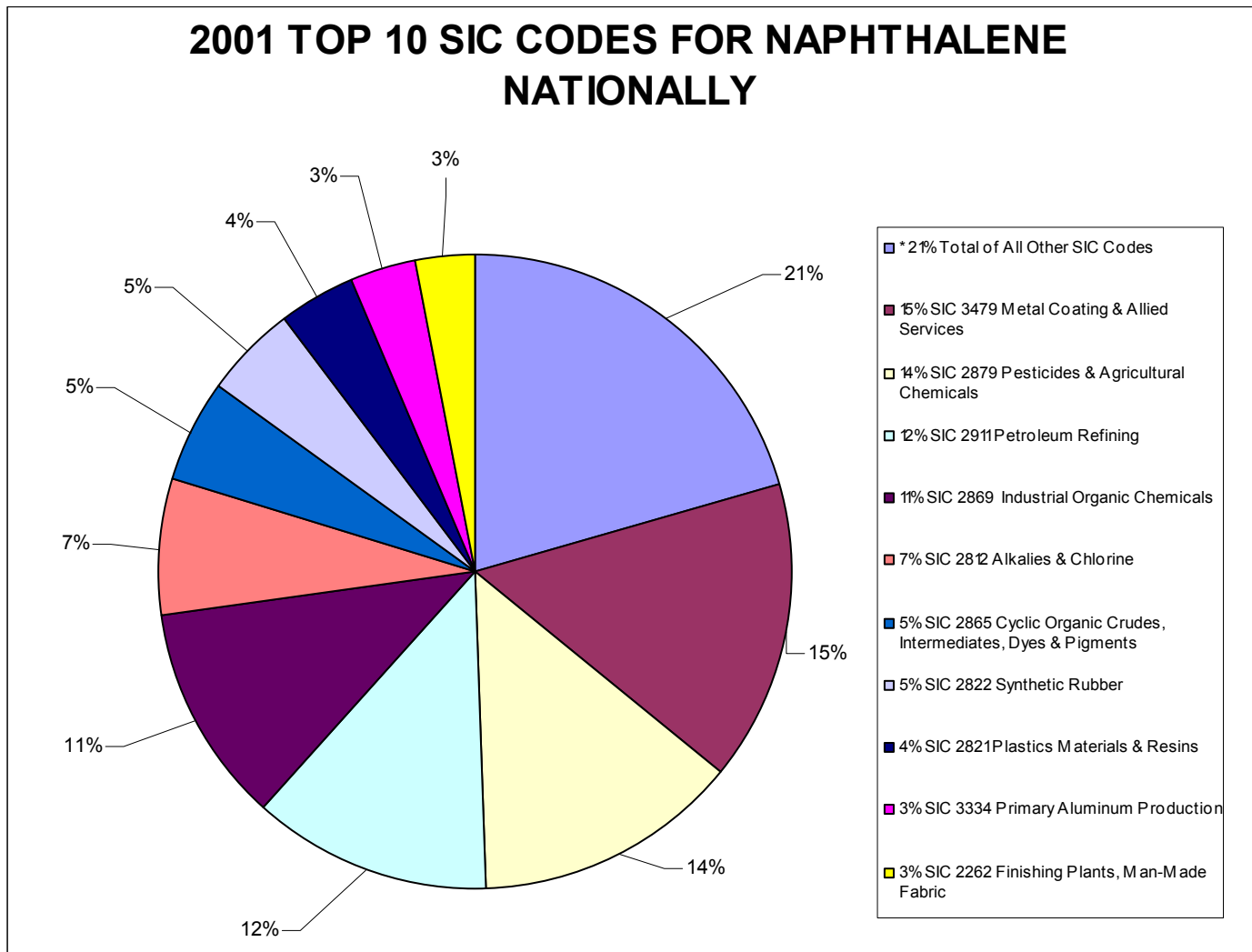
TOP INDUSTRIAL SECTORS BEHIND LEAD: Figure 3 shows that 10 high-quantity industrial sectors are behind the total pounds reported for lead and lead compounds. In 2001, the total quantity of all the reported lead and lead compounds was 28.8 million pounds—41 percent of all priority chemicals reported. The total quantity of lead and lead compounds being reported by these 10 top industrial sectors accounted for up to 37 percent of the total of 77 million pounds from all the reported priority chemicals and for up to 95 percent of the total lead and lead compounds.

Figure 3



TOP INDUSTRIAL SECTORS BEHIND NAPHTHALENE: Figure 4 shows the top 10 high-quantity industrial sectors behind the total pounds reported for naphthalene. In 2001, the total quantity of all the reported naphthalene was 10.2 million pounds—15 percent of all priority chemicals reported. The top 10 industrial sectors accounted for 79 percent of the 10.2 million pounds of naphthalene reported in 2001.

Figure 4



PART II—LIST OF PRIORITY CHEMICALS

Priority Chemicals	
Chemical Name and Summary Fact Sheet	CASRN
Organic Chemicals and Chemical Compounds	
1,2,4-Trichlorobenzene	120-82-1
1,2,4,5-Tetrachlorobenzene	95-94-3
2,4,5-Trichlorophenol	95-95-4
4-Bromophenyl phenyl ether	101-55-3
Acenaphthene	83-32-9
Acenaphthylene	208-96-8
Anthracene	120-12-7
Benzo(g,h,i)perylene	191-24-2
Dibenzofuran	132-64-9
Dioxins/Furans (considered one chemical on this list)	1746-01-6
Endosulfan, alpha and Endosulfan, beta (considered one chemical on this list)	959-98-8 33213-65-9
Fluorene	86-73-7
Heptachlor and Heptachlor epoxide (considered one chemical on this list)	76-44-8 1024-57-3
Hexachlorobenzene	118-74-1
Hexachlorobutadiene	87-68-3
Hexachlorocyclohexane, gamma-	58-89-9
Hexachloroethane	67-72-1
Methoxychlor	72-43-5
Naphthalene	91-20-3
PAH Group (as defined in TRI)	
Pendimethalin	40487-42-1
Pentachlorobenzene	608-93-5
Pentachloronitrobenzene	82-68-8
Pentachlorophenol	87-86-5
Phenanthrene	85-01-8
Polychlorinated Biphenyls (PCBs)	1336-36-3
Pyrene	129-00-0
Trifluralin	1582-09-8
Metals and Metal Compounds	
Cadmium	7440-43-9
Lead	7439-92-1
Mercury	7439-97-6

Source: <<http://www.epa.gov/epaoswer/hazwaste/minimize/chemlist.htm>>

PART III—CHEMICAL-SPECIFIC ACTIONS

EPA will add other toxics reduction actions throughout the implementation of this Priority and Toxic Chemicals Reduction Action Plan.

FIRST CHEMICAL ACTION: “ISSUE AND IMPLEMENT *EPA’S ROADMAP FOR MERCURY*” (COORDINATED BY OPPT)

EPA’s Roadmap for Mercury describes the Agency’s current and future actions to address mercury and provides the public with information about the wide range of actions taking place to reduce mercury exposure. *EPA’s Roadmap for Mercury* identifies six focus areas for future action to ensure a holistic approach for addressing mercury: (1) further reducing mercury releases to air, water, and land; (2) further reducing mercury uses, which later result in releases to the environment; (3) enhancing risk communication; (4) safely managing commodity-grade mercury supplies; (5) conducting research and monitoring; and (6) engaging in multilateral and bilateral agreements to facilitate global mercury reductions. Following are some of the chemical use reduction activities described in *EPA’s Roadmap for Mercury*.

Specific elements (emphasis will vary by region and program):

Establish Mercury-Free Product Labeling Program (OSW).

EPA/OSW is evaluating the potential for establishing a “Mercury-Free” product label for products with no intentionally added mercury. EPA will establish partnerships with manufacturers of mercury-containing and mercury-free products to enhance the market for mercury-free products and reduce the use of mercury in products.

Promote Mercury Product Use Reduction Partnerships (OPPT and OSW).

Many current mercury uses in products have cost-effective, mercury-free alternatives. Through the Green Suppliers Network, the Partnerships for Environmental Priorities (NPEP) Program, and other voluntary initiatives, OSW and OPPT are collaborating with manufacturers of mercury-containing and mercury-free products to establish voluntary reduction partnership programs with commitments to mercury product use reduction and phase-out goals. As a component of these partnerships, OSW promotes mercury-containing product take-back/recycling programs.

Explore Using TSCA Authorities to Promote Further Mercury Use Reductions in Appropriate Manufacturing Sectors (OPPT).

EPA will conduct a preliminary market analysis of mercury switches, relays, and measurement devices to identify candidate product manufacturers to partner with the Agency to reduce risks, as indicated above. Building upon successful state regulatory programs, EPA will consider further risk reduction mechanisms under TSCA (for example, TSCA section 5 significant new use rules and/or TSCA section 6 control regulations) and other authorities, as appropriate.

Outreach Activities to Consumers on Mercury Products and Mercury-Free Substitutes for Use in the Home (OPPT and OSW).

Building upon the information already available from states and other groups about consumer products that contain mercury, OSW will develop outreach materials (such as brochures) and make information available on its Web site. Additionally, OSW will investigate the potential for developing public service announcements to make consumers aware of the hazards of mercury and availability of mercury-free product substitutes.

Promote the Proper Collection and Recycling of Dental Office Amalgam Waste (OSW).

OSW is currently developing a dental office amalgam recycling program called its “gray bag” program. This program will assist dentists to properly collect and manage dental amalgam wastes generated in their offices in an effort to minimize mercury releases to air, land, and water resulting from current amalgam land disposal, incineration, and pretreatment practices at POTWs.

Mercury Automobile Switches (OPPT and OSW).

Building on successful state auto switch removal efforts, OPPT and OPEI are developing a partnership with the steel industry, auto scrap suppliers, the automotive industry, and mercury recyclers to remove mercury switches from scrapped autos in the U.S. prior to melting in scrap furnaces. Concurrently, OPPT is considering using a TSCA Section 5 Significant New Use Rule (SNUR) for auto switches to complement voluntary actions already taken by American automobile manufacturers. The SNUR could require notification to EPA prior to any renewal. Manufacture, import, or processing of mercury for use in auto switches. The notice to EPA would allow the Agency to control the uses before they start, if appropriate.

Characterize Mining Releases (OSW).

EPA is initiating a program to examine releases to land from active gold mines. This effort will attempt to characterize these mercury releases and assess their potential impact to determine if further action is warranted.

Schools Chemical Cleanout Campaign (SC3) (OSW) and Other Efforts.

The RCC has initiated the Schools Cleanout Campaign (SC3), which promotes removal of existing stocks of hazardous chemicals from secondary schools, safe chemical management, and national awareness. The ultimate goal of the SC3 is to create a chemically safer school environment in which chemicals are purchased wisely, stored safely, handled by trained personnel, used responsibly, and disposed of properly.

Recover Mercury from Fluorescent Bulbs (OSW).

In FY 2002 and 2003, OSW awarded ten cooperative agreements to state agencies and nonprofit organizations to conduct outreach promoting the recycling of fluorescent bulbs and other mercury containing lamps. OSW currently provides coordination and technical expertise to support these outreach programs. OSW is also determining which programs should be expanded nationally and where to place future resources in order to increase the recycling rate.

Reduce Mercury in Healthcare Facilities (OPPT).

EPA will continue to partner with the healthcare industry to eliminate the purchase of mercury-containing products such as measurement and control devices. EPA plans to expand its current efforts and build on past successes by doubling recruitment of facilities by 2007.

Develop Database to Track Reductions in Mercury in Key Sectors (OPPT).

EPA will compile and assess the quality of mercury use and substitutes data from current sources. This information will allow the Agency to evaluate the long-term effectiveness of its mercury reduction programs.

Promote the Procurement of Non-Mercury Products by Federal Agencies (OPPT).

Using EPA's Environmentally Preferable Products Database, EPA is compiling a list of alternative non-mercury products with special emphasis on those that contain non-mercury switches, relays, and measuring devices. EPA will make this information available to other interested buyers including state, tribal, and local governments; large industrial purchasers; hospitals; schools; and individuals.

SECOND CHEMICAL ACTION: "INCREASE EARLY RETIREMENT OF PCBs" (WITHIN OPPT AND THE REGIONS)

Encourage early retirement of transformers and capacitors containing polychlorinated biphenyls (PCBs) through a national voluntary phaseout program in accordance with the goals of the Priority Organic Pollutants (POPs) treaty.

- Conduct outreach to owners of PCB equipment.
- Emphasize the benefits of early retirement:
 - Cost savings with newer, energy-efficient equipment.
 - Reduced liability from owning PCB equipment that can leak and spill.
 - Possible reduced disposal.
- Reward participants who phase out equipment with public recognition, removal from the PCB transformer registration database, and possibly discounts for purchasing and disposal.
- Track progress of phaseout on the PCB transformer registration database.

THIRD CHEMICAL ACTION: "GET THE LEAD OUT"

This will be managed by OPPT. The electronics industry approached DfE, based on a relationship built through other collaborations, to work together to understand alternatives to lead solder. DfE and the industry have worked together to examine the toxicological and performance characteristics of lead-free solder and alternatives for circuit board applications. The transition to lead-free solders presents a significant opportunity for the reduced use of lead because the electronics industry is facing legislative and market pressure to phase out the use of tin-lead solders (e.g., by the European Union's Restriction of Hazardous Substances directive). Worldwide estimates of tin-lead solder use in 2002 are over 176 million pounds. Workable lead-free alternatives have emerged and are likely to be

implemented to replace a significant portion of the tin-lead solder that is used annually by the industry.

OSW may profile efforts of NPEP/non-NPEP entities that are eliminating and/or reformulating lead-soldering practices and want to showcase lead-free solder alternatives as part of an RCC Lead-Soldering Challenge.